

Appl. No. 09/923,242

Amdt. dated March 11, 2005

Reply to Office Action of November 17, 2004

Amendments to the Drawings:

The attached sheet of drawings includes changes to Figure 3. This sheet replaces the original sheet that includes Figure 3. The changes are believed to overcome the Examiner's objections to the Figure set forth in the Office Action dated November 17, 2004.

Attachment: Annotated Sheet Showing Changes.

REMARKS

In the above-mentioned Office Action, all of the pending claims, claims 1-14, were rejected. Claims 1-3, 8-10, and 12 were rejected under §102(e) over Jakobsson. Claims 4-5 were rejected under §103(a) over the combination of Jakobsson and Dent. Claim 6, 7, and 13 were rejected under §103(a) over the combination of Jakobsson, Dent, and Nag. Claim 11 was rejected under §103(a) over the combination Jakobsson and Langberg. And, claim 14 was rejected under §103(a) over the combination of Jakobsson, Langberg, and Lindhoff.

Additionally, objection was made to an informality recited in claim 6 and to line 3 of the abstract. Additional objection was made to Figure 3 of the drawings for missing labels in the elements of the Figure.

The listing of the claims set forth herein includes amendment to claim 6 that is believed to overcome the Examiner's objection thereto. Additional amendment to the specification is believed to overcome the Examiner's objection to the abstract, and substitute Figure 3 is believed to overcome the objection to the drawings.

The rejection of independent claims 1 and 12 under §102(e) over Jakobsson and the §103(a) rejection of independent claim 14 over the combination of Jakobsson, Langberg, and Lindhoff are respectfully traversed for reasons that follow.

With respect to the primary reference of Jakobsson, the reference appears to pertain generally to a homodyne receiver that has DC compensation. Column 4, lines 1-7 and column 6, lines 36-41, for instance, of Jakobsson discloses an average calculator 8, 8', 18, and 18' that identifies the maximal sample value of a sampled signal burst. The maximal sample value is used to determine the peak value of the signal burst by subtracting, from the maximal sample value, an estimated average DC level. The peak value and average DC level are then used by a square sum calculator 9, 9', 19, and 19' in calculating the signed square sum of the signal burst that, in turn, is weighted and used to calculate a final DC level estimate.

Claim 1 of the present invention, in contrast, recites the steps of determining the modulation extremes of a modulated signal, determining a DC offset for the signal from the modulated extremes, and processing the signal to compensate for the offset.

These steps are not carried out by Jakobsson, and to the extent that the Examiner asserts that Jakobsson shows such steps, the assertion is respectfully traversed. The ‘maximal sample value’ performed by Jakobsson is neither the same as, nor equivalent to, the step recited in claim 1 of determining the modulation extremes of a signal. The term ‘extremes’ inherently refers to more than one extreme, e.g., relates to both the maximum and minimum values of the signal. It is by calculating both extremes and from these determining the DC offset that significant benefit is derived from the present invention.

As Jakobsson fails to disclose the determination of modulation extremes of a received modulated signal or the determination of the DC offset from the modulation extremes, the rejection of the claim of the §102(e) over Jakobsson is believed to be in error. Claim 12 is analogously analyzed and is believed to be distinguishable over Jakobsson for the same reason. That is to say, Jakobsson fails to disclose a means for determining the modulation extremes of a received modulated signal and means for determining a DC offset for the signal from the modulation extremes.

With respect to the rejection of claim 14 over the combination of Jakobsson, Langberg, and Lindhoff, the applicant again traverses the Examiner’s reliance on Jakobsson or Langberg for showing a digital signal processor that determines the modulation extremes of the signals and for calculating a DC offset for the signals from the modulation extremes. While Lindhoff is further used in the combination of references used to reject claim 14, the Examiner does not rely upon this reference for disclosing, and the reference does not appear to disclose, a digital signal processor that makes such determinations or calculations. Accordingly, no combination of the cited references can be made to form the invention recited in claim 14.

The invention of the present application, as recited in the independent claims, is advantageous for various reasons, including the advantage of being less complex than that shown in the prior art. For instance, the approach set forth in Jakobsson requires complex calculations to be performed using a variety of components. A first step is to sample the original signal and to convert the sampled signal to a digital signal. An average DC level and a peak value of the digital signal are then determined using an average calculator. The samples of the digital signal are standardized, based on the average DC level and the peak value. And, a square sum

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calculator 9, 9' calculates a signed square sum for the standardized samples. This calculation is complex, requiring use of a memory device 6, 16. The signed square sum is weighted by a compensation factor and a final DC level estimate is determined based on this.

In contrast, an accurate and relatively simple alternative to known techniques is provided. Pursuant to the present invention, an inverse filter is applied to counteract the effect of the hardware high pass filter characteristic. To determine the DC offset, the relatively simple process of determining the modulation extremes of the sample signal burst in calculating the DC offset from these extremes is used.

As the dependent claims include all of the limitations of their respective parent claims, these claims are believed to be patentably distinguishable over the cited references, taken alone or in any combination, for the same reasons as those given with respect to their parent claims.

In light of the foregoing, therefore, independent claims 1, 12, and 14, and the dependent claims dependent thereon, are believed to be in condition for allowance. Accordingly, reexamination and reconsideration for allowance of these claims is respectfully requested. Such early action is earnestly solicited.

Respectfully submitted,

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